Periscope

Deutsche Zeitschrift für Nervenheilkunde.

(Band 29. Heft. 1-2.)

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1. *Regeneration Spinal Cord.*—As a result of six experiments, five of which were performed upon cats, and which consisted of exposing the spinal cord and then striking a single blow upon it with sounds whose heads were of various shapes, Fickler classifies the changes as follows: First, contusion, sub-divided into (a) without simultaneous injury of the spinal column; (b) with injury of the spinal column. Second, injury with alteration of the external form; and third, the post-traumatic lesions. In the first form there is disseminated insular degeneration of the nervous parenchyma. This may lead to a spinal paralysis without injury of the spinal column, hemorrhage, or cavity formation. Fickler gives a theoretical explanation for the occurrence of this condition, which depends upon the fact that the wave of the spinal cord is somewhat slower than the wave of the spinal canal, and he believes that experiments which he made upon a decapitated calf confirm this view. The injury is, of course, caused by the violent blow of the wave in the spinal cord against the surrounding bones. The experiments showed that the injuries in these cases were greatest at the position of the contre coup. In a second group, in which direct injury is present, it is found that the changes are greatest in the direction of the blow, although there is a certain degree of reflection from the commissure. The lesion is produced chiefly as a result of compression, and varies of course in proportion to the distance from the seat of injury, and the resistance of the different tissues, the nervous tissue being the least resistant, and the blood vessels the most resistant. Only in case the central canal is torn is there a sufficient extravasation of lymph to cause much destruction. Central hemorrhages never occur unless there is injury of the nervous tissue, and only when the central veins are in direct line with the injury. Thrombosis is of very little significance, and the changes in the blood vessels seem to be capable of producing a late spinal apoplexy. An interesting feature of these experiments was the appearance in some of the spinal cords examined of undoubted evidences of

regeneration. This occurs only in the nerve fibers, never in the ganglion cells. If the ganglion cells controlling the nerve fibers are destroyed by pressure or any other cause, regeneration does not occur. The commonest source from which regeneration proceeds is the spinal ganglion nearest to the focal lesion. The fibers always require a conducting path, usually provided by the blood vessels, particularly their perivascular lymph spaces. Experiments seems to indicate that regeneration only occurs in sensory fibers from the spinal ganglia, and in the fibers uniting various segments of the spinal cord. Consequently, the number of fibers capable of regeneration is not very large. When these regenerated fibers reach the gray substance they may travel upward for a considerable distance, and even come into relation with the dendritic processes of the ganglion cells of the gray substance. The fibers of Clarke's column, however, do not appear to be capable of reaching the central neurones, and the functional result attained by regeneration is probably insignificant.

2. *Sense of Vibration*.—Sterling has made a large number of investigations upon the perception of vibration, according to the method of Gradenigo, which consists of the determination of the point at which the vibrations cease to be felt in any particular part of the body, by means of an ingenious optical arrangement attached to the vibrating forks. In eighteen cases of tabes dorsalis he found, without exception, that this sensation was more disturbed than any other. In twenty-nine cases of other forms of nervous disease he found that, in a group involving the spinal column without affecting the spinal cord, there was no disturbance in the vibratory sense, but that in the cases of paresis with some pain, but without disturbance of touch, pain, or temperature sense, and in cases of distinct paralysis and disturbance of sensation, the perception of vibration was seriously impaired. In seven cases of disease of the peripheral nerves it was found that the disturbance of the vibration sense was limited to the territory controlled by the affected nerve. Sterling then discusses the various theories regarding this form of sensation; and finally states that personally he believes that the perception of vibration is common to all tissues in which the terminations of sensory nerves are found. The physical qualities of tissues have influence in so far that the denser tissues transmit better the vibrations. The skin is not inferior in this perception to the other tissues. He calls attention to the two conditions suggested by Goldscheider; first, disturbance of the sensation of touch in the skin, without loss of the perception of vibration; and second, the preservation of the sense of touch, with loss of the perception of vibration. Goldscheider explains this by the preservation of the vibratory sense in the deeper layers in the first instance, and its loss, in the second, but Sterling quotes some cases in which these conditions obviously did not exist. He does not believe, therefore, that we are capable by this method of determining directly the condition of the deep sensation. Although the subject is at present not clear, he believes firmly in the clinical value of the investigation of the vibratory perceptive phenomena.

3. *Abdominal Paralysis in Anterior Poliomyelitis*.—Ibrahim and Hermann report four cases of undoubted anterio-poliomyelitis. In all of them there was paralysis of the muscles of the abdomen; in two unilateral, and in two bilateral, but unequal. As in similar cases, the muscles of the back were also affected, in addition to muscles of the limbs. In all the children the rectus abdominalis appeared to be practically intact, the oblique muscles

being the ones chiefly affected. The symptoms consist in the bulging of the abdomen at the site of the paralysis. There is no deviation of the umbilicus toward the sound side. The abdominal reflex was usually, but not invariably, lost in all three segments. In two of the cases there were distinct signs of spontaneous improvement. In conclusion they report a case of spina bifida, and meningo-myelocele in which there was also paresis of the muscles.

4. *Tumors of Cerebellum and Hydrocephalus.*—Finkelnburg[4] reports three cases of intracranial disease, the first in a child of fourteen, who had had symptoms for 2¼ years. They commenced with headache, then vertigo, staggering gait, diplopia, difficulty in urination, paresthesia in the back, hallucinations of sensation in the extremities, and finally, impairment of memory, state of excitement, and pains in the back of the head and neck. There were choked disc. left-sided paralysis of the abducens. The reflexes were normal. At the autopsy a moderate hydrocephalus was found. The infundibulum had been forced forward, and pressed upon the trigeminal nerves and the abducens. The fourth ventricle was not distended, but in the floor was found a cavernous angioma. There were other changes of similar character, including chronic inflammation of the choroid plexus. The second case, a child of seven years, had symptoms for seven months. There were vomiting, frontal headache, staggering gait, and loss of vision. There were also choked disc. tenderness over the left posterior portion of the head, ataxia of the right arm and leg, incontinence of urine and feces; the reflexes were normal. The patient finally became blind; was unable to walk or stand; the patellar reflex was diminished; and there was an indication of Babinski. Trephining was of no avail. At the autopsy there was found a small and moderate hydrocephalus, thrusting forward the infundibulum; the meninges and the choroid plexus were normal microscopically and macroscopically. The third case, a woman of thirty-six, began with headache in the parietal region, vomiting, staggering gait, attacks of vertigo and diminution in vision. There was choked disc, particularly on the left side; tenderness to percussion in the parietal region; the tendon reflexes were active; and Schmidt's symptom was positive; that is to say, evidence of increase in the intracranial pressure by change of position. The patient died suddenly, after discharging a considerable amount of fluid from the nose. A diagnosis of cerebellar tumor was made, but at the autopsy a small circumscribed tumor was found in the right corpus striatum, projecting into the third ventricle, where it had produced a moderate degree of hydrocephalus. The essential features of these cases, according to Finkelnburg, are, first, that the cerebellar gait may be present in chronic hydrocephalus, and in tumors of the central ganglion, even in their early stages. Second, that a normal reflex activity, or even a diminished reflex activity, is not against chronic hydrocephalus. Third, that Schmidt's symptom is not characteristic for tumors of the cerebellum, but may also occur in tumors of the cerebrum. Fourth, circumscribed pressure and percussion tenderness of the skull may occur in chronic hydrocephalus, and therefore have only slight value as a local symptom. Fifth, predominant development of the choked disc upon one side is not a certain indication for the homolateral position of the tumor.

5. *Intermittent Claudication.*—A man of fifty-one had had for ten years evidence of passive congestion with pain in the left great toe. This was finally amputated with only partial relief. For some time he had suffered

also from partial intermittent claudication, involving both legs, and a somewhat similar condition in the tongue and right arm. If the patient talked for a long time the tongue became gradually stiffer and stiffer, until further conversation was impossible. From ten to fifteen minutes work with the arm caused it to become impotent, not so much on account of pain, as on account of an uncomfortable feeling of weight. Power in the right arm was less than in the left. The pulse in the dorsal arteries of the foot could not be felt. The pulse in the right arm was slightly weaker than on the left side. The pulse in the lingual arteries was weak on both sides. There was no atheroma of the peripheral arteries, but the second aortic tone was accentuated; the heart was moderately dilated; and on two occasions albumin was found in the urine. Determann discusses the few cases of intermittent claudication of the arm hitherto recorded. In the case he reports there was a family tendency to arteriosclerosis, and the patient smoked cigarettes habitually to excess.

6. *Tumors of Corpus Callosum.*—A man of thirty-eight, developed headache, pain and stiffness in the neck, frequently vomited, and occasionally had convulsions. Finally, there was paralysis of the left arm, and some diminution in vision. When examined the pupils reacted to light; the left lower facial muscle was weak; vision was impaired. All the other cranial nerves were normal. There was marked paresis of the left leg. The patellar reflex was diminished on both sides, but particularly on the left; there was no Babinski. The left upper extremity was almost completely paralysed, and there was distinct ataxia. The tendon reflexes were diminished. The abdominal and cremasteric reflexes were more active on the left. The pulse was 64 and regular. The internal organs were regular. The patient seemed to be exceedingly confused, and was usually apathetic. He died in an epileptic attack. A tumor involving the anterior and middle portions of the corpus callosum and the adjacent portions of the hemisphere, was found, which miscroscopically proved to be a spindle-celled sarcoma. J. Sailer (Philadelphia).